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PHYSICAL ANTHROPOLOGY OF THE JEWS

II.—PIGMENTATION

By MAURICE FISHBERG

The color of the skin, hair, and eyes is a very important racial trait. Whether pigmentation is a fixed trait—that is, a racial characteristic transmitted by heredity—or is influenced to any extent by climate, altitude, nutrition, and social condition, is a question on which anthropologists are not agreed. The modern school of sociologists have collected considerable evidence tending to show that the phenomena of pigmentation are greatly influenced by climate, etc., while many others adduce strong evidence to the contrary.¹ In our study of the anthropology of the Jews this is of great importance. If it can be shown that the color of hair and eyes is altered under varying external conditions, irrespective of heredity, we may have a ready explanation of the high percentage of blond hair and blue eyes among the Jews. On the other hand, if pigmentation is an hereditary racial trait, the 12 percent of less pigmented Jews must have had their origin in an infusion of non-Semitic, probably Aryan, blood.

The type of the Jew is dark. The ancient Hebrews were characterized as having dark hair. The ideal beauty of Semites has been “raven black” hair. Jacobs quotes a Mishnic Rabbi, R. Ishmael, who says: “The sons of Israel are like boxwood, neither black nor white but between the two”—*i. e.*, of olive color. The Talmud appears to use the term black (*shachar*) as synonymous with both hair and youth. There is no mention in the Bible nor in the Talmud of the color of the eyes of the ancient Hebrews; but it must be mentioned that, according to some authorities on the Hebrew language, there is no equivalent of “blue” in the Bible or the Talmud.

We have made notes on the color of the skin, hair, and eyes of 2272 Jews, of twenty years or older, in New York City. Of these

¹ For an excellent summary of the subject see W. Z. Ripley, *Races of Europe*, N. Y., 1899, chap. IV.

1188 were men and 1084 women. By far the larger portion of these people are of foreign birth—immigrants from nearly every European country and some from various parts of Asia and Africa. Following the plan adopted in treating of the cephalic index,¹ we will here report our results for all the Jews, leaving the consideration of the differences between the Jews in various countries to a future special article on the subject.

Besides the color of hair and eyes, we have made observations on grayness, baldness, and freckles, and also on the variety of the hair.

As will readily be observed by one who attempts to distinguish the degrees of pigmentation of skin, hair and eyes, there is often considerable difficulty in deciding which color to assign a given individual. It is quite easy to distinguish golden-blond from black or dark-brown hair; but between these two extremes there are found minor gradations which are not easily separated, and one often remains in doubt as to the class with which he is dealing. There also arises a problem concerning the number of colors into which it is advisable to divide the material. Some anthropologists distinguish as many as fifteen colors of skin, hair, or eyes; while the late Dr R. Virchow, in his classical elaboration of the material on the color of skin, hair, and eyes of German school children, collected by the German Anthropological Society² distinguishes only two colors for the skin (fair and dark), four for the hair (blond, brown, black, and red), and three for the eyes (blue, gray, and brown). This classification we have adopted with only slight modifications; we distinguish six classes of hair coloration—black, brown, chestnut, light chestnut, blond, and red.

The distinction between fair and dark skin is not always readily apparent, and in doubtful cases we have been guided by the general impression gained by a careful inspection at a distance of from one to two meters from the individual. Only those whose skin appeared brownish or swarthy were taken as dark, and those having a yellowish or somewhat muddy tint were regarded as fair.

¹ See the last number of this journal, pages 684–706.

² “Gesamtbericht über die von der deutschen anthropologischen Gesellschaft veranlassten Erhebungen über die Farbe der Haut, der Haare und der Augen der Schulkinder in Deutschland,” *Archiv für Anthropologie*, xvi, pp. 275–475.

The hair was considered black when the darkness was very deep, without a brownish tinge. Such hair usually has a luster which by reflected light gives it a bluish appearance, but this luster is not observable in black hair which is not kept scrupulously clean by frequent brushing.

Brown hair was considered to be that which, although fairly dark, did not show a luster or, in a reflected light, presented a brownish tinge. It is sometimes difficult to distinguish this color from black, particularly in hair the care of which has been neglected. Quite often "brown" hair will appear decidedly black when thoroughly cleaned and brushed.

As chestnut we counted hair which by its coloration did not appear positively brown but which was not fair enough to be termed blond. As this class includes many gradations of color, we have found it necessary to divide it into dark and light chestnut. Most hair here considered to be light chestnut may sometimes be taken for blond, especially when seen by direct sunlight, but close observation discloses a dark tinge. Much of the hair included in this class shows a somewhat rufous appearance, without being decidedly red; in other instances it is almost flaxen, but with a dark tinge.

Under blond we have classed hair which is almost white, as well as the flaxen, ashen, yellowish, and golden blond hair. Some of these have a more or less grayish tinge, others are even slightly rufous, while still others have no decided color at all.

There are many shades of red hair, ranging from fire-red through brownish red to that which is almost blond but which has a decidedly rufous appearance. In doubtful cases we have been guided by other signs of erythrim, such as an abundance of freckles, and, where possible, by noting the color of the pubic hair, which is orange yellow in most cases of erythrim.

The color of the iris was observed at a distance of about one meter. Eyes showing the least degree of pigmentation were recorded as blue, but deeply pigmented eyes, with a dark bluish appearance on close observation, were not included in this class. Only eyes having no color at all or a mixture of light blue and gray were counted as blue.

All dark eyes which were not decidedly black were recorded as

brown. In this class are included the "beer-colored" eyes (very frequent among the eastern European Jews) and those having a deep dark tint which appears dark blue on close inspection. As gray were considered all eyes which could not be included in the above two classes ; it consequently includes most of those which some observers have described as green, although many of these are essentially brown. Such cases as the latter we have classed among the brown eyes. Black eyes are usually brown on close inspection, but at a distance of about a meter the iris appears deep black and shows no difference in the color of the pupil.

Of those investigated it is found that 269 Jews (22.64 percent) had dark skin and 919 (77.36 percent) had fair skin. Of the 1084 Jewesses, 276 (25.46 percent) had light skin and 808 (74.54 percent) had dark skin. This indicates that Jewesses have darker skin than Jews. According to Ploss and Bartels¹ the skin of women is usually fairer than that of men.

The distribution of the colors of the hair is shown in the following table :

TABLE I.—COLOR OF THE HAIR OF 2272 JEWS IN NEW YORK CITY

Color of the Hair	Jews		Jewesses	
	Number	Percent	Number	Percent
Black	546	45.95	474	43.72
Brown	291	24.49	286	26.39
Chestnut { Dark	155	13.05	109	10.06
{ Light	92	7.75	113	10.42
Blond	74	6.23	62	5.72
Red	30	2.53	40	3.69
Totals	1188	100.00	1084	100.00

Dividing the hair in three classes as dark, fair, and red, we find the proportions to be as follows :

TABLE II.—PERCENTAGE OF DARK AND FAIR HAIR AMONG JEWS

Color	Jews	Jewesses
Dark hair	83.49 percent	80.17 percent
Fair hair	13.98 percent	16.14 percent
Red hair	2.53 percent	3.69 percent

¹ *Das Weib*, 7. auflage, 1902, p. 26 ; see also Havelock Ellis, *Man and Woman*, London, 1895, pp. 223-230.

These figures show that over 80 percent of the hair of Jews is dark; they also indicate that the hair of Jewesses is fairer than that of Jews, which does not agree with the results obtained by other investigators of Jewish anthropology. Talko-Hryncewicz¹ found that among the Jews in Lithuania and Ukraine the percentage of dark hair in the women is 84 percent, while among the men it is only 60.3 percent. Light hair was found by him 16 percent in women and 39.7 percent in men. Weissenberg² also found that Jewesses are more brunette than the Jews, but his conclusions are based on only one hundred men and forty-one women. Yakowenko³ also determined that dark hair is more frequent among Jewesses than among Jews, only seven of the former out of one hundred having light hair. This authority remarks that black and dark brown hair is more common among women than among men, while blond hair is more frequent in men. Ripley⁴ has made use of this assertion regarding the greater darkness of Jewesses as one of the main arguments of his theory of social selection in man. Our observations, however, based on a large number of Jewish women, do not support this view.

In Poland Elkind has also found that the Jews are darker than the Jewesses, the former showing 96.81 percent with dark and 0.53 percent with fair hair, as against 86.4 percent of dark and 8.0 percent of fair hair.⁵

Statistics of the color of the eyes among the Jews investigated by us are presented in table III.

According to our figures more Jewesses (64.46 percent) than Jews (58.41 per cent) have dark eyes. Pure blue eyes also appear to be more frequent among the men (24.08 percent) than among the women (19.65 percent). On this point the observations of other

¹Julian Talko-Hryncewicz, "Charakterystyka fizyczna ludności żydowskiej Litwy i Rusi," *Zbiór Wiadomości do antropologii Krajowej*, xvi, pp. 17-22, Krakow, 1892.

²S. Weissenberg, "Die südrussischen Juden," *Archiv für Anthropologie*, xxiii, p. 108 of reprint.

³M. G. Yakowenko, *Materials for the Anthropology of the Jews* (in Russian), p. 152, St Petersburg, 1898.

⁴*Races of Europe*, pp. 399-400, N. Y., 1899.

⁵A. D. Elkind, "The Jews," *Publications of the Soc. of Friends of Natural Science*, etc. (in Russian), civ, pp. 37-47, Moscow, 1903.

investigators agree with those of our own. Yakowenko¹ found 76 percent of Jewesses with dark eyes, and only 69 percent of Jews. Of Talko-Hryniewicz's 799 Jewesses, 61.8 percent had dark eyes; of his 869 Jews, only 56.5 percent had dark eyes.² The same has

TABLE III.—COLOR OF THE EYES IN 2272 JEWS

Color	Jews		Jewesses	
	Number	Percent	Number	Percent
Black	269	22.64	206	19.00
Brown	425	35.77	482	44.46
Blue	286	24.08	213	19.65
Gray	208	17.51	183	16.89
Totals	1188	100.00	1084	100.00

been observed by Weissenberg,³ who found 75.6 percent of dark eyes in Jewesses and only 64.8 percent in Jews.

Typical representatives of a race show a constant interrelation between the color of their hair and that of their eyes; for example, in the blond northern races their light hair is usually accompanied by blue eyes, while in the brunette races the dark hair is usually accompanied by brown eyes. Individuals who do not exhibit such interrelation, having dark eyes with fair hair, or the reverse, are considered as "mixed types." From the figures shown in tables I to IV we find that in men 86.02 percent had dark hair (including red in this group) and 58.41 percent had dark eyes. We would therefore expect to find that the combination of dark hair and dark eyes in the same individuals should occur according to the formula $86.02 \times 58.41 \div 100 = 50.24$ percent of the individuals observed. Fair types are expected on the same principle to occur in $(13.98 \times 41.59 \div 100 =) 5.81$ percent of Jews. In Jewesses those figures are expected to be 53.21 percent brunettes and 5.89 percent blonds. In reality, however, we find that these types are distributed in the following proportions:

¹ Loc. cit., p. 158.

² Loc. cit., pp. 24-26.

³ Loc. cit., p. 108. For an excellent résumé of the sexual characters of the color of skin, hair, and eyes, see Havelock Ellis, *Man and Woman*, pp. 223-230, London, 1896.

TABLE IV.—TYPES OF PIGMENTATION IN 2272 JEWS

Type	Jews		Jewesses	
	Number	Percent	Number	Percent
Brunette	675	56.82	633	58.39
Blond	119	10.02	107	9.87
Mixed	394	33.16	344	31.74
Total	1188	100.00	1084	100.00

From this table we find that in 56.82 percent of all the Jews observed, both the hair and the eyes were dark ; the combination of fair hair and eyes was observed in 10.02 percent of Jews and in 9.87 of Jewesses. The brunette type, which is considered characteristic of the Jews, is thus reduced to only 56 percent in the contemporaneous representatives of the race. But when we recall that other races of Europe show even a smaller percentage of their racial type combination, we are not surprised. In Germany, among 6,000,000 school children only 31.80 percent had both blond hair and blue eyes, while of the 75,377 Jewish children 42 percent were of the pure brunette type.¹ In Austria, Schimmer has found that of non-Jewish school children 19.79 percent were of the pure blond type and 23.17 of the brunette type, while Jewish school children showed a percentage of from 32 to 47 for pure brunettes according to the province, and from 8 to 14 percent of pure blonds.² That the Jews have apparently not kept themselves free from intermixture can be seen from the number of mixed types found among them. Thirty-three percent of the Jews had dark hair with light eyes, or the reverse ; Weissenberg³ found 27.9 percent of mixed type ; Yakowenko⁴ observed 67.31 percent, and Majer and Kopernicki⁵ 61 percent. Talko-Hryniewicz⁶ records even 74.3 percent of mixed

¹ R. Virchow, "Gesamtbericht . . . über die Farbe der Haut, der Haare und der Augen," etc., *Archiv für Anthropologie*, XVI, p. 298.

² G. A. Schimmer, "Erhebungen über die Farbe der Augen, der Haare und der Haut bei den Schulkindern Oesterreichs," *Mittheilungen der Anthropologischen Gesellschaft in Wien*, suppl., 1884.

³ Loc. cit., p. 107.

⁴ Loc. cit., p. 45.

⁵ "Charakterystyka fizyczna ludności galicyjskiej," *Zbiór Wiadomości do antropologii Krajowej*, I, p. 111.

⁶ Loc. cit., p. 45.

types among 869 Jews in southern Russia, and in Poland there were 41.53 percent according to Elkind.¹ In addition, the great number of individuals with blond and light-chestnut hair,—irrespective of their association with light or dark eyes, which reaches 13.98 percent (exclusive of the red) in the Jews and even 16.14 percent in the Jewesses we have investigated,—also indicate foreign intermixture, and the same can be seen from the number of blue and gray eyes, amounting to 41.59 percent in Jews and 36.54 percent in Jewesses. All this again points to racial intermixture. Appended is a table representing the results of investigations of the color of the hair and eyes of 145,380 Jewish school children in Germany, Austria, and Hungary.

TABLE V.—COLOR OF EYES AND HAIR IN 145,380 JEWISH CHILDREN

Country	Number of Children	Hair (percent)				Eyes (percent)			Authority
		Blond	Brown	Black	Red	Blue	Brown	Gray	
Germany	75,377	32.03	54.39	11.46	0.42	19.30	51.99	27.00	Virchow
Austria	59,808	27.0	55.4	16.9	0.6	23.5	45.9	30.6	Schimmer
Bavaria	7054	30.0	50.0	20.0	—	20.0	49.0	31.0	Mayr
Hungary	3141	23.7	57.0	19.3	—	18.3	57.5	24.2	Korösi

From this table we find that children with blond hair number 23.7 percent in Hungary and as high as 32.03 percent in Germany. This large proportion is true also of children with blue or gray eyes—in Hungary their percentage being 42.5 and in Austria 54.1. These figures would seem to indicate wide Teutonic influence.

The color of hair and eyes of children frequently becomes darker as the latter approach maturity. Observations show that from 10 to 20 percent of children who have blond or flaxen hair and blue eyes become darker as their age advances.² Some anthropologists even reject investigations on pigmentation in children as useless on this account,³ and a survey of table VI, which shows the color of the hair and eyes in adults, shows that the percentage of light hair is reduced to 2.6 percent in Beddöe's observations on

¹ Loc. cit., p. 39.

² See Frisch, "Bemerkungen zur anthropologischen Haar untersuchung," *Zeitschrift für Ethnologie*, p. 190, 1888.

³ See *Reports of the Anthropometric Committee of 1883*.

Ashkenasic Jews, but reaches 21.10 percent in Majer and Kopernicki's series of Galician Jews, and even 32 percent in Blechman's series of Jews from northern Russia. The last mentioned may be due to chance, as the number of individuals observed was only one hundred. The percentage of dark-haired individuals is perceptibly increased in adults.

TABLE VI.—COLOR OF HAIR AND EYES IN 5501 JEWS

Observer	Country	No.	Hair			Eyes		
			Dark	Fair	Red	Brown, Black	Blue	Gray.
Majer and Kopernicki	Galicia	943	74.54	21.10	4.36	55.04	7.95	37.01
Blechman	Russia	100	68.00	32.00	—	57.00	10.00	33.00
Weissenberg	Russia	100	83.00	13.00	4.00	67.00	22.00	11.00
Talko-Hryniewicz	Russia	938	75.79	20.05	4.16	52.19	10.34	36.47
Yakowenko	Russia	245	87.29	12.70	—	69.8	4.90	25.3
Beddoe								
<i>Sephardim</i>	} Various {	290	93.0	3.5	3.5	68.0	20.0	12.0
<i>Ashkenasim</i>		375	95.3	2.6	1.1	59.0	27.0	14.0
Lombroso	Italy	103	96.0	4.8	—	70.00	—	30.00
Pantukhof	Caucasia	251	96.0	2.0	2.0	—	—	—
Pantukhof	Caucasia	204	—	—	—	84.31	1.47	15.19
Glück	Bosnia	55	79.6	18.5	1.8	69.1	—	30.9
Ammon	Baden	86	84.9	12.8	2.3	48.8	25.6	25.6
Jacobs								
<i>Ashkenasim</i>	} England {	423 {	73.8	25.5	0.7	58.8	11.1	30.1
<i>Sephardim</i>			88.1	11.9	—	66.8	21.3	11.9
Elkind	Poland	200	96.81	0.53	2.66	60.5	22.0	17.5
Fishberg	Various	1188	83.49	13.98	2.53	58.41	24.08	17.51

Another interesting point is the high percentage of red-haired Jews. From our own investigations we find 2.53 percent of men and 3.69 of women with red hair. Majer and Kopernicki, Weissenberg, and Talko-Hryniewicz find 4 percent of Jews with red hair, and Beddoe's studies of the Sephardim, who are known to be darker than the Ashkenasim, show 3.5 percent with red hair. Glück¹ found one red-haired individual among fifty-five Jews in Bosnia, but he states that this is due to chance, because there is no doubt that red-haired Spagnuoli² are quite common in Bosnia, and

¹ "Beitrage zur physischen Anthropologie der Spaniolen," *Wissenschaftliche Mittheilungen aus Bosnien und der Hercegovina*, IV, pp. 587-592.

² The Jews in Europe are divided into two main groups, *Ashkenasim* and *Sephardim*. The former constitute about ninety percent of the modern Jews, while the latter are only about ten percent. These two groups of Jews differ in their traditions, rites, and physical type. Some anthropologists consider the Sephardim as the branch of Israel which has maintained to the present time the Semitic type in a purer state and has kept itself more free from admixture of non-Semitic blood than the Ashkenasim — the German and Polish

the proportion of such individuals is really greater than his figures would indicate. Indeed, erythrism has been regarded as characteristic of the European Jews. We find that the red hair, particularly the beard, is usually frizzly and nearly always accompanied by freckled skin. This erythrism appears not to be of recent origin; it was not unknown among the ancient Hebrews, for Esau was said to have been "red all over like a hairy garment."¹ The reference to David as "ruddy" is explained by the Targum as "red-haired." Jacobs² comments on this as showing that the Jews of the time when the Targum was written (about 600 A. D.) were not averse to regarding the typical Jewish king as rufous. Painters in the early centuries of this era represented Christ with light hair, and Mary Magdalene is almost always depicted as having light hair. Judas Iscariot is considered to have been a typical red-haired individual, although the New Testament makes no mention of it.

The hair of the beard in males is usually lighter than that of the head, and red beards are more frequent than red heads. Observations on the color of the beards of 587 Jews show the following distribution:

TABLE VII.—COLOR OF THE BEARD IN 587 JEWS

	Number	Percent
Black	175	29.82
Brown	118	20.10
Chestnut	81	13.80
Light chestnut	34	5.79
Blond	115	19.59
Red	64	10.90
	587	100.00

Jews. The name *Sephardi* has its origin in *Sepharad*, the biblical name of an unknown land into which the Jews exiled from Jerusalem were brought (see *Abadias*, 20). The Medieval Rabbis believed that Sepharad referred to Spain and Portugal; hence the name Sephardim. When banished from Spain in 1492, about 300,000 Jews were dispersed: some wandered to northern Africa; others to Italy, Turkey, Asia Minor, etc. The remnants of these Jews living at the present time in the Balkan states, as Bosnia, European Turkey, Roumania, etc., are known by the name *Spagnuoli*, probably because of the Spanish jargon they still employ. See W. Z. Ripley, *Races of Europe*, pp. 385-386, New York, 1899; Richard Andree, *Zur Volkskunde der Juden*, pp. 100-104, Leipzig, 1880; A. Leroy-Beaulieu, *Israel among the Nations*, pp. 119-120, New York, 1896; also Glück, loc. cit.

¹ *Genesis*, xxv, 25.

² *Journal Anthropological Institute*, xv, pp. 23-62.

From this table it is found that red hair is nearly three times as common in the beard as in the hair of the head. This is not at all surprising to any one who has observed the Jews closely, for the beard is quite frequently red and very often has at least a rufous tinge of frizzly character. I find that red beards are more frequently found among the Jews of Galicia than among those of other countries. Besides the red beards we find from the table that 25.38 percent of Jews had fair colored beards—nearly double the proportion of those with fair heads.

We have distinguished four varieties of hair: (1) Smooth (*Schlicht* in German, *droit* in French); (2) Wavy (*wellig* in German, *ondé* in French); (3) Frizzly (*lockig* in German, *frise* in French); (4) Woolly (*kraus* in German, *crêpe* in French). Observations on 867 men showed the following distribution in the varieties of hair:

Smooth hair	582 = 66.97 percent
Wavy hair	223 = 25.66 percent
Frizzly hair	55 = 6.33 percent
Woolly hair	9 = 1.04 percent

Weissenberg has found 88 percent of smooth, 14 percent of wavy, and 2 percent of frizzly hair. From our own figures it is seen that 93 percent of the hair of Jews is either smooth or wavy, and that frizzly hair is rare (6.33 percent). Weissenberg¹ found only two curly haired Jews among 100, and Majer and Kopernicki² found only one curly haired individual in 118, or 0.84 percent. Yakowenko³ found 4 percent with curly hair, and Glück⁴ found among the Spagnuoli of Bosnia that 52.9 percent had smooth or wavy, and 47.1 percent curly or frizzly hair. Weissbach,⁵ in his study of the Jews of the Balkan peninsula, found that curly hair is very frequent among them, the proportion being as high as 10 in 19. This last is of course a rather large percentage not borne out by

¹ Loc. cit., p. 103.

² Loc. cit., p. 115.

³ *Materials for the Anthropology of the Jews* (in Russian), p. 153, St Petersburg, 1898.

⁴ Loc. cit.

⁵ "Körpermessungen verschiedener Menschenrassen," *Ergänzungsband, Zeitschrift für Ethnologie*, pp. 212-225, Berlin, 1877.

any other investigation, and the only way in which it can be explained is that it is due to chance, owing to the small number of individuals observed (55 by Glück and 19 by Weissbach), or to judging the variety by the appearance of the beard which is very frequently frizzly in Jews; indeed the rufous beards are almost always frizzly, while the black beards are often of the same character.

Pigmentation undergoes changes with advance in the age of the individual. Grayness, or canities, may be premature or senile. Up to the age of 35 or 40 years the hair retains its normal color with most people. If grayness occurs before that time, it is considered premature; otherwise it is considered to be normal or senile. We noted grayness in 161 individuals over 20 years of age, being 18.52 percent of the total of 867. The youngest individual with gray hair was 22 years of age; the oldest retaining the natural color of his hair was 46 years of age. Weissenberg thinks that grayness appears quite early in Jews, while Yakowenko¹ shows that it appears rather late, or about the age of 45 years. From our own observations we do not think that the Jews show any marked difference in this respect to other civilized peoples. Of the 161 gray-haired individuals examined, only 28 were younger than 35 years — a proportion which cannot be regarded as abnormal.

Another change in the hair which appears with advanced age is baldness, or alopecia, due to arrested development of the pilary system. It normally appears at about the age of 45 years, when other signs of decay become manifest, as grayness, loosening or decay of the teeth, diminution in the keenness of sight, etc.; under these circumstances it is called *alopecia senilis*. On the other hand, *alopecia prematura* takes place at an earlier age, and is more frequent in brain workers and in those leading sedentary occupations or exposed to prolonged mental worry. Many writers have stated that this change takes place earlier in Jews than in non-Jews. Weissenberg² has found that 16 percent of Jews between the ages of 21 and 50 years presented more or less baldness, the youngest showing this change being 23 years of age. Yakowenko,³ on the

¹ Loc. cit., pp. 31-32.

² *Die südrussischen Juden*, p. 103.

³ Loc. cit., p. 32.

other hand, shows that baldness is exceptional in Jews younger than 46 years, and when it occurs before this age it is usually due to favus. From our investigations we are inclined to agree with Yakowenko. Excluding alopecia due to favus we have found 83 individuals with more or less baldness among the 1188 over 20 years of age. The youngest was of 26 years. Only twelve individuals younger than 40 were affected with baldness.

Freckles (ephelides) was noted in all the red-haired individuals, and those having swarthy skin are also very often affected with freckles. Of 74 men and 62 women observed with light hair, only 4 men and 2 women were freckled.

The most important point brought out by our investigation of the characteristics of the color of the hair and eyes of modern Jews is the large proportion of those with blond hair and blue eyes. From our study of the head-form of the Jews it was found that there is a remarkable uniformity of type and that no racial intermixture is observable. With pigmentation the case is different—12 percent of modern Jews are diverging from the brunette type, having a combination of blond hair and blue eyes. In addition a still larger percentage of blond traits are today found “scattered broadcast without association one with another,” as Ripley would say. If the Jews are a pure race, as some claim, and as their crania would seem to indicate, how can we account for the blond hair and the blue and gray eyes? Broca,¹ discussing this problem in 1861, expressed the belief that the blond Jews of Alsace-Lorraine and Germany had their origin in the intermixture of Jews with northern races, and that the dark hair of the Jews did not become lighter as a result of climatic influences. On the other hand, Pruner Bey asserted his conviction that the blond Jews are not the result of racial intermixture. Among the ancient Hebrews blond traits were not rare, and these were transmitted to the modern Jews by heredity.

The black Jews of Cochin (India) and the interior of Malabar have, according to Prichard,² become dark and completely like the native inhabitants in their complexion as a result of climatic influences, notwithstanding the fact that these Jews avoid all intermix-

¹*Bull. de la Soc. d'Anthropologie de Paris*, II, p. 410.

²*Natural History of Man*, p. 145, London, 1848.

ture with the native inhabitants. It is now established, however, that this view is totally wrong, and that these black Jews are the descendants of ancient negro slaves who had been converted to Judaism. In Abyssinia there are also black Jews, called *Falashas*, who are of negro descent, and a similar class exists in Persia. All this shows that climate had nothing to do with the production of the black Jews.

Virchow investigated the question whether the blond Jews of Europe are the result of their sojourn for centuries in a northern climate. While classifying the colors of the skin, hair, and eyes of Jewish school children in Germany, this authority¹ was surprised to find 11.17 percent of pure blond type, and urged the importance of determining whether these "Indogermanic" Jews were the result of an infusion of Aryan blood, or whether the ancient Hebrews were already a mixed race of blond and brunette types. An investigation by Virchow in separate provinces of Germany disclosed the noteworthy fact that in localities where the Jews have lived for centuries in strict isolation from other races, owing to religious and social conditions, and presumably did not intermarry with their Gentile neighbors, the proportion of blond types did not decrease. In the Prussian provinces the Jews are not isolated socially, but on the contrary have entered into general social intercourse with the non-Jewish people among whom they dwell. As the percentage of blond types among the Germans in Prussia is very high, Virchow made observations to determine whether this fact had any influence on the proportion of blonds among the Prussian Jews, but found that this was not the case. It is remarkable that in the German provinces in which the blond types preponderate, the Jews exhibit a larger proportion of brunettes. On the other hand, it is a striking fact that farther south, in Silesia, where the non-Jewish population are of very dark complexion, the Jews have a high percentage of blonds. The same is the case in Austria where, as shown by Schimmer,² the farther eastward one goes the greater the percentage of blonds is found.

¹ Loc. cit.; also "Berichterstattung über die statistischen Erhebungen bezüglich der Farbe der Augen, der Haare und der Haut," *Correspondenz-Blatt für Anthropologie, Ethnologie und Urgeschichte*, pp. 91-111, 1876.

² Loc. cit.

Virchow was of the opinion that this increase in blond traits in eastern and southern Germany and Austria can be explained by the large number of conversions to Judaism and marriages between Jews and non-Jews which took place in these provinces in the Middle Ages. Their number was so large that King Ladislaus of Hungary issued a decree in 1092 prohibiting marriage between Jews and Christians. This decree apparently did not have the desired effect, for in 1229 Bishop Robert van Grau reported that many Jews lived with Christian women illegitimately and that the latter were often converted to Judaism; that Christian parents sold their children to Jews, and that many even permitted themselves to be circumcised. In a few years Christianity thus lost thousands of adherents.¹

Another method of determining whether the blond traits of the Jews originated in Aryan intermixture is to learn the relation of the color of hair and eyes to other racial traits, such as cranial type and stature. If we find that most of the blond Jews are tall in stature and dolichocephalic, we may have reasonable ground for ascribing the origin of these characteristics to an infusion of Teutonic blood. Few anthropologists have studied the problem from this point of view. Majer and Kopernicki² have found that while among the brunette Jews of Galicia 6.2 percent are dolichocephalic, 20 percent of the blond Jews of the same section are also dolichocephalic. This of course tends to indicate some relation between blondness and long-headedness among the Jews in Galicia. Pantukhof³ found that in Odessa, Russia, the Jews who have dark hair and eyes are of short stature, while those who have gray or blue eyes and fair hair are taller. The same observer reports⁴ that among the Jews in Caucasia he found that those who are tall in stature have usually light eyes; those who had brown eyes were 1.617 meters in height while those with light eyes averaged 1.644 meters. On the other hand, Ammon⁵ found no relation between blond hair, blue eyes, and

¹ v. Czoernig, *Ethnographie der Oestr. Monarchie*, II, pp. 113-114, quoted from R. Andree, *Zur Volkskunde der Juden*, pp. 53-54, Leipzig, 1881.

² Loc. cit., part I, p. 132.

³ "Semitic types" (in Russian), *Proc. Russian Anthropological Society*, pp. 26-30, St Petersburg, 1889.

⁴ *Observations anthropologiques au Caucase* (in Russian), pp. 37-38, Tiflis, 1893.

⁵ *Zur Anthropologie der Badener*, pp. 663, 664, Jena, 1899.

dolichocephaly among the Jewish recruits in Baden, Germany; while Elkind¹ found that in Poland the Jews who have dark hair and eyes are taller than those who have fair hair and eyes. But all these investigations are based on few observations. We hope in the near future to speak again of this question when discussing the interrelations of the physical characteristics of the Jews. Because of the large amount of material we are collecting on the subject, we hope to be able to contribute to the solution of this important problem.

Richard Andree² does not agree with the view that the blond elements in the modern Jews are due to Aryan influence. He points to the fact that among the Syrians in Palestine there is a considerable proportion of blonds and that there were blonds among the ancient Hebrews. He is therefore inclined to consider the blond traits among the Jews of today as an inheritance from the Hebrews of ancient times.

Luschan points out that while intermarriage between Jews and Christians was quite common in the Middle Ages, it was not sufficient to account for the 11 percent of blond types among the German Jews, and in the same manner he disposes of the theory, advanced by some, that the origin of the blond Syrians is to be looked for in the intermarriage of the Syrians with European crusaders. The blond types among the Syrians, as well as among the Jews, had their origin in the blond people who inhabited Syria in antiquity. These were the Amorites, known in the Bible as the "sons of Enak," who were "men of great stature." They are known to have been a blond people from the colored representations of them which have been left on various monuments by the ancient Egyptians. Luschan³ considers these Amorites as Aryan, and claims that all evidence points to them as the ancestors of the blonds among the modern Jews.

There are many evidences in the Bible showing conclusively that the ancient Hebrews have not maintained themselves in that state

¹ Loc. cit., pp. 86-87.

² *Zur Volkskunde der Juden*, p. 34, Leipzig, 1883.

³ "Die anthropologische Stellung der Juden," *Correspondenz-Blatt für Anthropologie, Ethnologie und Urgeschichte*, xxiii, pp. 94-102, 1892.

of extreme purity which is generally supposed. The prohibition of intermarriage with Gentiles is good proof that cross-marriage frequently occurred, because if it had not, there would have been no use in enumerating the Hittites, Gergashites, Amorites, Canaanites, Perizzites, Hivites, and Jebusites, and to state that "neither shalt thou make marriages with them; thy daughter thou shalt not give unto his son, nor his daughter shalt thou take unto thy son."¹ The patriarchs also intermarried with Gentiles: Abraham cohabited with Hagar, an Egyptian; Joseph also had an Egyptian wife—Asenath, the daughter of Potipherah, priest of On.² Moses married a Midianite woman, Zipporah,³ but he was rebuked for this act: "Miriam and Aaron spake against Moses because of the Ethiopian woman whom he had married."⁴ In addition may be mentioned the "mixed multitude" that went along with the Hebrews when they left Egypt,⁵ and in all probability later intermarried with them. King David was the son of the Moabite Ruth; and of Solomon, himself the son of an Hittite woman, the Bible says he "loved many strange women, together with the daughter of Pharaoh, women of the Moabites, Ammonites, Edomites, Zidonians, and Hittites."⁶ Such intermarriages with Gentile women by the great patriarchs and kings of Israel were in all probability imitated and practised by many of the ancient Hebrews. When, after the Babylonian captivity, the tribes of Judah and Benjamin returned to Jerusalem, Ezra arraigned the Hebrews for their intermarriage with Gentiles and appealed to them to maintain the purity of the race of Israel. "Ye have transgressed, and have taken strange wives, to increase the trespass of Israel," said the prophet.⁷ Nehemiah speaks in similar terms: "In those days also saw I Jews that had married wives of Ashdod, of Ammon, and of Moab; and their children spake half in the speech of Ashdod, and could not speak in the Jews' language, but according to the language of each people."⁸ There is also good evidence in the Talmud of intermarriage between the ancient Hebrews and their Gentile neighbors, and there is historical record of a remarkable wholesale conversion to Judaism

¹ *Deuteronomy*, VII, 1, 3.

² *Genesis*, XLI, 45.

³ *Exodus*, II, 21.

⁴ *Numbers*, XII, 1.

⁵ *Exodus*, XII, 38.

⁶ *I Kings*, XI, 1.

⁷ *Ezra*, X, 10.

⁸ *Nehemiah*, XIII, 23, 24.

in southern Russia in the Middle Ages. The Chozars, a Turanian tribe, accepted Judaism, according to Alexander Harkavy, in the year 620 of our era; others again believe that it occurred in the eighth century. Other conversions have taken place, some of which are mentioned above. These intermarriages have left their impress on the modern Jews. The blond traits may be regarded as having originated in the infusion of non-Jewish blood into the veins of the modern Jews.